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Marine Casualty Investigations

Enquêtes sur les accidents maritimes

Investigation Report to the Minister pursuant to sections 477 or 480 of the Canada Shipping Act (1985)

Rapport d'investigation au Ministre conformément aux articles 477 ou 480 de la Loi sur la marine marchande du Canada (1985)

Canada

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Ce rapport est aussi disponible en français.

REPORT OF INVESTIGATION INTO THE CIRCUMSTANCES ATTENDING THE COLLISION BETWEEN THE [illegible] REGISTERED BULK CARRIER "[illegible]" AND THE CYPRIOT REGISTERED CONTAINER VESSEL "MALOJA II", OFF THE SOUTH COAST OF NEWFOUNDLAND, MARCH 4, 1988.

REPORT No. 528

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REPORT OF INVESTIGATION INTO THE CIRCUMSTANCES ATTENDING THE COLLISION BETWEEN THE GREEK REGISTERED BULK CARRIER "JOHN M" AND THE CYPRIOT REGISTERED CONTAINER VESSEL "MALOJA II", OFF THE SOUTH COAST OF NEWFOUNDLAND, MARCH 4, 1988

Particulars of Vessels

Name	"MALOJA II"	"JOHN M"
Former Names	"MALOJA" to 1986 "PETRA CROWN" to 1983 "MALOJA" to 1979 "IDA" to 1979 "VINLAND" to 1979 "MAERSK TEMPO" to 1978 "VINLAND" to 1977	"THEKOS" until February 1988
Official Number	707821	382
Port of Registry	Limassol	Syros
Flag	Cypriot	Greek
Call Sign	C4HX	SYOY
Gross Tonnage	7680	16,685
Net Tonnage	4979	12,002
Displacement (at time of incident)	14,090 tonnes	18,356 tonnes
Length	143.82 m	177.0 m
Breadth	18.57 m	22.9 m
Depth	10.16 m	14.5 m
Draught (at time of incident)	7.05 m forward 7.56 m aft	5.8 m forward 6.2 m aft
Type	Steel, bulk/general cargo/container vessel	Steel, bulk carrier
Built	1974, Gebruder Schurenstedt KG, Wesser, Germany	1978, Busan, S. Korea
Propulsion	Two, 4 stroke 6 cylinder, diesel	One, 6 cylinder Hitachi diesel, BHP

	engines, driving one controllable-pitch propeller, total output 2 x 3,350 kW	12,000 driving one fixed-pitch propeller
Bow Thruster	One, athwartship thrust, fitted forward	None
Cargo	5,442 tonnes of general cargo in 278 containers plus 15 empty containers.	Nil, 10,681 tonnes sea-water ballast
Crew	20	24
Classification	Germanisher Lloyd	American Bureau of Shipping (ABS)
Owners	Seafree Maritime Limassol, Cyprus	Phostiva Athens, Greece
Operators	Columbia Ship Management Ltd. Limassol, Cyprus	Fairsky Athens, Greece
Local Agent	March Shipping Halifax, N.S. Canada	I.H. Mathers & Son Halifax, N.S. Canada
Navigating Equipment		
Radar (1)	Decca Mark TM1226, 3 cm, ranges 1.5 to 48 miles, ship's head up or gyro stabilized, fitted with a reflection plotter	JRC type NCD326B, 3 cm, ranges 0.75 to 96 miles, ship's head up, non gyro stabilized, fitted with a reflection plotter
Radar (2)	Decca RMS1230, 10 cm, ranges 1.5 to 48 miles, ship's head up or gyro stabilized, fitted with a reflection plotter	JRC type NCD326B, 10 cm, ranges 0.75 to 96 miles, ship's head up, non gyro stabilized, fitted with a reflection plotter
Radio Direction Finder	Plath SFP 7051 NG, audio and visual	JRC

Loran C	None	Northstar 6000
Echo Depth Sounder	Kelvin Hughes visual and recording	ELAC, visual and recording
Satellite Navigation System	Decca D34	Navidine ESZ4000
VHF Radiotelephone (1)	Sailor RT 142/29	JRC
VHF Radiotelephone (2)	Sailor RT 143	JRC
Gyro Compass and Automatic Pilot	Anshutz	Tokyo Keiki, Gylot
Magnetic Compass	Fitted	Fitted
Course Recorder	None	Tokyo Keiki, type CR3
Chart in Use	Canadian Hydrographic Services chart number 2516, entitled Gulf of St. Lawrence, corrected to date	British Admiralty chart 232A corrected to 1987 NTM 18

Description of Vessels

"MALOJA II'

The "MALOJA II" is an all steel vessel with engines and accommodation situated aft; she has three holds and is multipurpose. She is capable of carrying bulk, general or containerized cargo. Two electric self-propelled cranes are fitted on rails on the foredeck for use when self-loading or discharging bulk or general cargo; they are not used for containers and had not been in use during the voyage.

Her two main engines drive a single controllable-pitch propeller and are operated from the navigating bridge (wheelhouse); when at sea they are in constant readiness for manoeuvring and the controllable-pitch propeller is also in constant readiness for adjusting speed; the engines can be stopped by depressing a button on a console. The service speed at full ahead in good weather is some 14 knots.

All of her certificates were valid and up to date.

"JOHN M"

The "JOHN M" is an all steel vessel with engine and accommodation situated aft and five holds forward; she was designed and built for the purpose of carrying dry bulk cargoes.

Her main engine is operated from the engine-room, engine speeds and directions being adjusted by engine-room personnel in response to orders transmitted from the bridge by telegraph. During times when frequent or immediate engine movements can be expected, such as entering or leaving port or when in poor visibility, additional personnel man the engine-room and the engine is set at manoeuvring speed which is approximately 12 knots. Her service speed at full ahead in good weather is some 15.5 knots.

All her certificates were valid and up to date although still referring to her former name of "THEKOS".

NOTE: (1) All times in this report are expressed in Atlantic Standard Time (UTC minus 4 hours).

(2) A glossary of abbreviations and terms can be found following the Findings in this report.

Background

The "MALOJA II" had loaded a full cargo at Montreal, Quebec, and was outward bound for European ports. The "JOHN M" was in ballast from Spain, empty of cargo and inward bound for Sorel, Quebec, where she was to load a full cargo of grain.

The courses of both vessels required them to transit the Cabot Strait and when they reached the eastern approaches to the strait they became positioned such that they were approaching each other in an 'end on or nearly end on' situation.

Visibility was poor requiring the use of radar and, during avoidance manoeuvres by both vessels they collided in position 47°02'N, 57°55'W, causing damage to both. There were no injuries or pollution as a result of the collision. Both vessels diverted to Halifax, Nova Scotia, under their own power to effect repairs; arriving there without further incident.

Costs of repairs were estimated to be:

"MALOJA II"	$1,000,000
"JOHN M"	$ 825,000

Preamble

During the course of interviews with the personnel involved in the collision, it became apparent there were discrepancies between each vessel's account of events, particularly in the accounts of radiotelephone communications and the initial bearings and distances of each vessel one from the other.

To clarify the radiotelephone communications, recordings made by a Canadian Coast Guard Radio Station (CCGRS) were consulted and written reports were requested from another vessel in the area which further clarified radiotelephone communications and also courses, speeds and positions.

The Narrative section of this report is made as described by each vessel. The discrepancies are dealt with in the Analysis section.

In the absence of ships' radar plots, plotted chart positions and times of positions prior to the collision, all times and distances have been estimated from each ship's known speed and the times of the CCGRS recorded messages.

Narrative

The "MALOJA II"

The "MALOJA II" was manned by a German master and chief engineer, the rest of the crew being Phillipine nationals. She had loaded a full containerized general cargo at Montreal and had departed her berth at 0536, March 2, 1988, bound for Rotterdam, Holland. Of the 293 containers on board, 233 were stowed in the three holds, the remaining 70 stowed on deck. They were of the standard box type and those on deck were stowed five abreast, fore and aft, to a total height of three tiers measuring 24'(7.31 m) above the hatch covers. (See photograph.)

Two river pilots were engaged at Montreal to assist in navigation. As normal, the pilots were relieved at Trois Rivieres and again at Quebec. Pilots had the conduct of the vessel during the passage down the St. Lawrence River from

Montreal to Les Escoumins, where they disembarked at 2335, March 2. This part of the voyage was normal and uneventful. From 2335 the vessel proceeded without the assistance of pilots and followed a route recommended by Ice Operations Central, Ottawa, relayed through Eastern Canada Traffic Zone Regulations (Ecareg).

Patches of ice of varying thickness and sea-coverage were met during the passage until the vessel entered ice-free waters at 1328, March 4, in position 47°58'N, 60°08'W, which is some 40 miles west of Cape Ray, Newfoundland and the outer limit of the Ecareg system in the Cabot Strait.

The master had been constantly on the navigation bridge since departing Montreal and since leaving the pilotage station at Les Escoumins he had full conduct of the ship and ice navigation which required constant engine speed alterations and helm orders. This represented some 18 hours of pilotage followed by a further 38 hours of ice navigation. Consequently, when entering ice free waters at 1328, March 4, he had spent some 56 hours on the navigation bridge.

At 1430, having ensured the required courses for the remainder of the voyage off the south coast of Newfoundland were correctly drawn on the chart and his directives regarding Ecareg reporting positions were written on the chart and understood, he left the bridge having first ensured that the area was ice free, that the visibility was good and the 2nd mate who was officer of the watch (OOW) was confident and in full control.

At 1530 he telephoned the bridge from his quarters and advised the OOW that he (the master) should be called in the event of encountering more ice or poor visibility such as in rain, fog or snow; in the meantime, he intended to sleep.

At 1600 the 1st mate relieved the 2nd mate and the watch was handed over in the usual manner with no irregular events; the master's orders were verbally passed on.

The vessel passed 10.5 miles south of Port-aux-Basques, Newfoundland at 1730, March 4, and a course of 112° by gyro compass was set on the automatic pilot. The gyro compass contained no error and therefore indicated true courses, however, 2° were allowed for leeway to make good the course of 114° (T) drawn on the chart. This course would have taken the vessel to a position to the south of Saint Pierre/Miquelon islands, with an estimated time of arrival there of approximately 0230, March 5, 1988.

At 2000 the watch was again changed with the 3rd mate

relieving the 1st mate; the master's orders were relayed to the 3rd mate and the watch again handed over in the usual manner. At that time, there was one other vessel in the vicinity which was proceeding in the same general direction as the "MALOJA II" and had recently been overtaken by her.

The weather at 1430, when the master left the bridge, was overcast with south-westerly winds of 18 knots, moderate seas, clear with good visibility; from then until 2000, the wind backed to east-south-easterly and increased to 24 knots with the skies remaining overcast and the seas clear of ice.

Since entering ice free waters, the steering had been kept on automatic pilot and from the time of sunset at 1739 the navigating bridge was manned by the officer on watch (OOW) and two seamen, one who kept a look-out, the other on standby.

From approximately 1930, the vessel encountered occasional snow flurries which intermittently reduced visibility to 0.5 to 1.0 mile, requiring the use of radar to detect other vessels.

The radar was set on the 12 mile range and in the gyro stabilized mode. At approximately 2113 a target was observed to be bearing 117°T; i.e., 5° to starboard of the ship's heading and at the edge of the radar screen (PPI), distant 12 miles.

No radar plotting was made but the following system was used:

The radar cursor was placed over the heading marker and the distance of the target to starboard of the ship's heading (course) judged by gauging its position relative to the cursor and the innermost parallel index line. On the 12 mile range, the cursor and parallel index lines show distances apart of 2 miles and the target was midway between the cursor and innermost parallel index line, therefore, it was considered to be 1 mile to starboard of the "MALOJA II" course line.

At approximately 2118, 5 minutes later, the distance off by range marker was observed to be 9.5 miles and the target judged to be still at 1 mile distant from the heading marker (course); from this the target was assumed to be another vessel on a reciprocal course and the closest point of approach (CPA) would be 1 mile, abeam, to starboard.

It was decided to give the other vessel more passing distance to starboard by increasing the CPA to 1.5 miles and

approximately 1 minute later at 2119 course was altered by automatic pilot 12° to port to steer 100°T. No further radar bearings or distances were taken by use of the bearing cursor or range markers until shortly before the collision but, when the target was judged to be 3.5 miles off, the radar was switched to the 6 mile range and the target appeared to be bearing some 30° on the starboard bow, giving the impression it would pass clear.

Radiotelephone contact was then made with the other vessel, the contents of which reportedly concerned the weather to be expected by each and their departure ports and destinations.

After the conversation, the radar was again consulted and the other vessel appeared to be bearing 20° on the starboard bow and distant 1 mile. Both the look-out and the OOW then looked to starboard and saw the navigation lights of a vessel bearing 20° on the starboard bow, distant 0.9 mile; the bearing and distance were judged by radar. The lights seen were two white masthead lights and a green starboard side-light; however, after a few moments when the other vessel was distant 0.5 mile, the masthead lights changed their relative positions and a red port side-light appeared, indicating the other vessel had altered course to starboard and was on a collision course with the "MALOJA II". The standby seaman was immediately ordered to take over hand steering, the auto pilot disengaged and the helm put to hard-a-port.

Moments later, at a time indicated by CCGRS radiotelephone recordings to be 21 hours, 40 minutes, 24 seconds, the other vessel, subsequently identified as the "JOHN M", collided with the "MALOJA II" striking her starboard side with her (the "JOHN M") port bow. The first contact was made at approximately two-thirds of the length of the "MALOJA II" from forward with a second contact at the starboard quarter.

The sound and force of the impacts awoke the master who immediately went to the bridge and took control of the situation; he was accompanied by other personnel, one of whom stopped the engines.

The "JOHN M"

The "JOHN M" was manned by a Greek master and crew and was bound for Montreal, Canada, from Algeciras, Spain empty of cargo and in ballast in order to load a full cargo of grain. After an uneventful crossing of the North Atlantic she contacted Ecareg by radio, 24 hours before arrival at the Traffic Zone as required, requesting clearance to enter the

zone. Ecareg replied granting clearance and also provided the recommended ice routing as supplied by Ice Operations Central, Ottawa. The initial position for the ice route to Montreal was latitude 47°50'N, longitude 60°00'W in the Gulf of St. Lawrence, some 40 miles north-west of Cape Ray, Newfoundland and the outer edge of the Ecareg system in the Cabot Strait.

To reach the position, a course of 292°T was laid off on the chart which would take the vessel to a position 12 miles south-west of Cape Ray, from where a course of 318°T would take her to the ice route position. The gyro compass had an error of -1°, therefore, to steer 292°T, the gyro course was set at 291°. South-westerly winds of 24 knots were causing 2°leeway, therefore, the course steered was set at 289°G, 290°T to counteract the leeway and make good the required course of 292°T.

At 1900 March 4, the vessel encountered intermittent snow flurries reducing visibility to an estimated 0.5 to 1.0 mile and the vessel was put into the standby mode for reduced visibility; i.e., the master attended the bridge, the engines were put on standby, engine revolutions reduced to 85 giving a speed of approximately 12 knots, steering switched to hand steering and the regulation sound signals made; a look-out had been posted since the time of sunset at 1739. The weather continued to be, winds south-westerly 24 knots, overcast with frequent snow flurries and moderate to rough seas.

The ship's clocks had been advanced to Eastern Standard Time to coincide with the time at Quebec; the 2nd mate relieved the 1st mate at 2100 (2000 ship's time) becoming the officer on watch (OOW). The watch was handed over as usual with no irregular events. At that time there were no other vessels either visually or radar detectable in the area.

After the 1st mate had been relieved, he and the master discussed the future loading programme which required the study of cargo plans, etc., which were placed on a chart table at the rear part of the wheel-house.

The radar was of the 'ship's head up' type and was set on the 12 mile range; at 2113 two targets were observed at the edge of the screen, distant approximately 12 miles. One target was right ahead, the other to starboard, bearing some 2° on the starboard bow and slightly further away. Bearings and distances throughout were determined by use of the bearing cursor and variable range marker.

No radar plotting was made but the following system was

used:

Continual observation of the radar determined that the target to starboard changed its bearing slightly to port but the target ahead stayed bearing right ahead. When the distance to the targets ahead had been reduced to approximately 6 miles, the radar was switched to the 6 mile range and the "JOHN M" course was altered 10° to starboard to steer a course of 299°G, placing the target ahead to 10° on the port bow. It was believed that this action would be sufficient to avoid both targets and they would pass to port. The target originally to starboard further changed its bearing to port as expected and later passed to port some 2 miles distant by radar; however, the target which had been ahead (later determined to be the "MALOJA II") remained bearing 10° to port and at 3 miles distant became obscured in the sea clutter.

Reportedly no radiotelephone communications were made or attempted.

The look-out man and the 2nd mate went to the port wing of the navigation bridge in an attempt to visually sight the navigation lights of the other vessel and a few moments before the collision saw the mast head lights and green sidelight of the "MALOJA II" bearing some 45° on the port bow and some 3 to 4 cables off.

It was apparent that they would collide, therefore, the helm was ordered to hard-a-starboard and the engine telegraph rung to stop. A few moments later, before the engine movement could be implemented and while the "JOHN M" was turning to starboard, they collided, her port bow striking the starboard side of the "MALOJA II".

Both Vessels

Both vessels were navigating during hours of darkness and in restricted visibility due to snow flurries. Sunset in the area had occurred at 1743, both vessels were exhibiting the regulatory navigation lights and the "JOHN M" making the regulatory sound signals. They had both altered course and were further altering course to avoid collision when the collision occurred. The "MALOJA II" was altering hard to port, the "JOHN M" hard to starboard. There were two impacts, the first as the port bow of the "JOHN M" contacted the after deck-crane and hull of the "MALOJA II", the second as the after part of the bow of the "JOHN M" contacted the starboard quarter of the "MALOJA II".

After the collision, the two vessels stopped and their

crews were mustered at emergency stations. VHF radiotelephone communication was made and ships' names and particulars exchanged together with the extent of damage. When the extent of damage to both had been ascertained and it became apparent there was no immediate danger of sinking, it was decided that both should proceed under their own power and independently to Halifax, Nova Scotia, for inspection and repairs. In the meantime a Canadian Coast Guard Radio Station had heard the VHF communications and the vessel overtaken by the "MALOJA II" stopped at the scene and offered assistance, which was acknowledged and declined.

The "JOHN M" had sustained damage to plating and frames on her port bow above and below the waterline. The below waterline damage initially leaked sea water into No. 1 hold and forepeak, which was controlled by pumping until the vessel was deballasted and trimmed by the stern, raising the damage above the waterline.

The "MALOJA II" sustained extensive damage to her after deck-crane, some hull plate damage above the waterline and damage to seven of the containers stowed on deck.

Analysis

1. Navigational and mechanical equipment, both vessels

Both vessels were reportedly in good condition and had not experienced navigational, mechanical or steering equipment problems either prior to or during the collision.

2. Watchkeeping procedures

It was reportedly the practice on both vessels to comply with the International Maritime Organization (IMO) International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978 (STCW); extracts regarding the watchkeeping of the deck departments were displayed in the wheel-house of the "JOHN M" and in the front of the deck log-book of the "MALOJA II".

A copy of the relevant STCW extracts are contained in the Annex to this report.

3. "JOHN M" Understanding of STCW

The STCW extracts regarding the watchkeeping of the deck department were prominently displayed on the wheel-house

bulkhead of the "JOHN M"; they were written in Greek and were reportedly fully understood by the OOW. This was borne out by the fact that he complied with STCW, Standing Orders, which states in part:

> ... In the event of decreasing and poor visibility (3 miles or less) the International Regulations for Preventing Collisions at Sea are to be carried out and the master to be called immediately ...

However, although on the bridge, the master took no part in the navigation until immediately before the collision.

Paragraphs 23 and 24(a) which expand on the above section of the Standing Orders were also complied with inasmuch as fog signals were sounded, the engine placed on standby ready for immediate manoeuvre and the speed reduced to the manoeuvring speed of 12 knots which was also considered safe, a proper look-out was posted and a helmsman took over hand steering in place of the automatic pilot.

4. **"MALOJA II" Understanding of STCW**

The STCW extracts regarding the watchkeeping of the deck department were contained in the front of the deck log-book on the "MALOJA II"; they were in English but fully understood by the master whose natural language was German but who indicated an excellent understanding and ability in English.

The OOW was a Philippine national whose natural language was reportedly Philippine, spoken with a Tagalog dialect; however, he had a good understanding of written English and understood the contents of the STCW. He had initialled the STCW in accordance with the last paragraph of the Standing Orders, which read:

> All Officers will sign this as an indication that they have read and understood the above instructions, IMO recommendations and orders.

5. **Weather records at the time of the collision**

The "MALOJA II" had recorded the weather prior to the collision as overcast, winds east-south-east 24 knots, moderate seas and snow flurries, visibility poor. The "JOHN M" had recorded the weather prior to the collision as overcast, winds south-westerly 24 knots, moderate

seas, snow flurries, moderate to poor visibility. The other vessel in the area advised in a written statement only that the visibility was poor, at times less than 1 mile.

6. Good visibility, both vessels

During good visibility and times of darkness, when at sea enroute from port to port, it was the practice on both vessels to man the navigating bridge with the officer of the watch (OOW) and two ratings, the OOW in overall charge and one of the ratings keeping a look-out, the other on standby, ready to take over hand steering or any other duty as required.

7. Ascertaining visibility

In the event that intermittent restricted visibility is encountered at sea such as due to snow flurries, when the visibility will often change rapidly over a short period of time, it is often difficult to ascertain the ranges of visibility unless there is a reference point to use such as a known (radar) distance off another visible ship or fixed point such as a visible land mass. Rule 6 of the International Regulations for Preventing Collisions at Sea 1972 (Collision Regulations) entitled 'Safe Speed' recognizes this difficulty and of the factors to be taken into account in determinirg a safe speed, one is quoted as:

> ... the more exact assessment of the visibility that may be possible when radar is used to determine the range of vessels or other objects in the vicinity ...

Both vessel's speeds were considered safe under the circumstances prevailing before risk of collision developed, however the above factor is valid for estimating visibility for any reason and the "MALOJA II" had overtaken another vessel which was some 2.0 miles astern of her at the time of collision and would have provided a ready reference point.

Additionally, both vessels should have had an appreciation of the actual reduced visibility in their tracking of the approaching vessel. Visibility of navigation lights at the time of collision was reported to be 0.9 mile from the bridge of the "MALOJA II" and 0.3 to 0.4 mile from the bridge of the "JOHN M".

8. Reduced visibility, both vessels

When the "MALOJA II" encountered reduced visibility at a time indicated in the deck log-book as approximately 1900, it was entered in the log-book as visibility poor, snow flurries, however, none of the recommendations of STCW were complied with, except that the engines were available for immediate manoeuvre, as they were constantly, and the vessel proceeded as though at sea in clear weather with the OOW in overall charge, the vessel steered by automatic pilot, a look-out posted due to darkness and the standby rating available as required.

The master's first indications of the collision were the sounds and impacts and he arrived on the bridge moments later while still dressed in sleeping attire.

When the "JOHN M" encountered reduced visibility at 1900, the Standing Orders contained at the end of the STCW extracts were reportedly complied with; i.e., the master was called and paragraphs 23 and 24(a) were also complied with; however, the fog signals were not heard at any time by the "MALOJA II".

When the master arrived on the bridge at approximately 1905 there were no other vessels either visible or radar detectable in the area, therefore, the opportunity was taken to consult the proposed loading arrangements and plans with the 1st mate; his first indication that a collision was probable occurred when he heard the engine-room telegraph ring and the urgent order from the OOW to the helmsman to put the helm to hard-a-starboard.

9. Chronology of the main events

Except for the time of radio conversations on VHF channel 16, all times are approximate, those marked with an asterisk have been estimated by a time, speed and distance calculation.

2210 Third vessel steering 110° x 12/5 knots
Third vessel detects "JOHN M" by radar bearing 118°-119° miles.
Third vessel plots "JOHN M" to be steering 290° x 14 knots
Third vessel determines speed of "MALOJA II" to be 13 knots.

2113 "MALOJA II" detects "JOHN M" by radar bearing 117° x 12 miles.
"JOHN M" detects third vessel by radar bearing

293° x 12+ miles.
"JOHN M" detects "MALOJA II" by radar bearing 291° x 12 miles.

2118 "MALOJA II" observes "JOHN M" by radar bearing 118° x 9.5 miles and determines CPA of "JOHN M" to be 1 mile to starboard.

2126* Third vessel reports overhearing the "JOHN M" asking "MALOJA II" for "right to right" passing (VHF). (See analysis 13, para. 2)
"JOHN M" asks third vessel for "right to right" passing (VHF).
Third vessel confirms "right to right" passing with "JOHN M" (VHF) and a/c to starboard to 140° x 12.5 knots.
"JOHN M" informs third vessel that she has a/c to starboard to 310°.
Third vessel observes by radar that "JOHN M" and "MALOJA II" are 5 to 6 miles apart.

2132* "MALOJA II" observes by radar that "JOHN M" is 30° to starboard (130°) x 3.5 miles.

2132.8 "MALOJA II" calls "JOHN M" on VHF channel 16, "vessel on my starboard bow etc."

2133 "JOHN M" replies to "MALOJA II" on VHF channel 16, "the ship on the port side etc."

2133.2 "MALOJA II" continues on VHF channel 16, I have the situation, you cross our b...."

2133.25 "JOHN M" interrupts this transmission and requests channel change from 16 to 10.

2138* "MALOJA II" observes green sidelight of "JOHN M" visually 20° to starboard (120°) by 0.9 mile (radar distance).

2138.7* "MALOJA II" visually observes green sidelight of "JOHN M" change to red, distance by radar 0.5 mile.
"MALOJA II" commences changing steering mode from automatic to hand-steering.

2138.9* "JOHN M" visually observes green sidelight of "MALOJA II" 45° to port (255°) x 0.3 to 0.4 mile (radar distance).
"JOHN M" a/c "hard to starboard".

? "MALOJA II" completes change of steering mode and a/c "hard to port".

2140.1 "JOHN M" requests on VHF channel 16 "Red to red passing".

2140.2 "MALOJA II" replies on VHF channel 16; "Going hard to port now".

2140.4 Collision.

10. **Account of collision avoidance actions "MALOJA II"**

When the radar target of the "JOHN M" first appeared on the "MALOJA II" radar screen, the radar had been set on the 12 mile range and the target was at the extreme distance of 12 miles, bearing 5° on the starboard bow; i.e., 117°T.

The cursor was then placed over the heading marker and the distance of the target to starboard of the heading marker gauged by ascertaining its position between the innermost parallel index line and the cursor/heading marker. There are five parallel index lines on each side of the cursor; therefore, on the 12 mile range, they indicate distances apart of 2 miles. The target was gauged to be midway between the cursor and the innermost parallel index line to starboard and was therefore considered to be 1 mile to starboard of the "MALOJA II" course.

After an approximate 5 minutes had elapsed, the radar was again consulted and the target's distance off determined by range marker to be 9.5 miles, indicating a combined approach speed of some 30 knots. The bearing was not determined but the target was again considered to be midway between the heading marker and parallel index line and therefore on a reciprocal course which would give a closest point of approach (CPA) of 1 mile abeam to starboard.

It was decided to increase the CPA to 1.5 miles and at a distance of 9.5 miles course was altered, by automatic pilot, 12° to port to steer 100°T.

No radar plotting or equivalent systematic observations of the target were made but the target was occasionally viewed and its bearing appeared to be opening to starboard.

The "JOHN M" navigation lights were sighted when distant

0.9 mile and they indicated the two ships would pass starboard to starboard, however, when distant 0.5 mile the "JOHN M" appeared to alter course to starboard placing her in a starboard to port crossing situation. The next avoiding action of helm hard-a-port was taken moments before the collision and after the "JOHN M" navigation lights had indicated she was crossing from starboard to port.

11. Account of collision avoidance actions "JOHN M"

When the radar target of the "MALOJA II" first appeared on the "JOHN M" radar screen, the radar had been set on the 12 mile range and the target was at the extreme distance of 12 miles, bearing right ahead. Another target, later determined to be another vessel, was slightly astern and bearing to starboard; i.e., to port of the "MALOJA II". A continuous radar watch was kept and when the target ahead had reached a position of 6 miles ahead and therefore, on an unchanged bearing, the radar was switched to the 6 mile range and course altered 10° to starboard to steer 300°T. It was anticipated that the vessel ahead would attain a CPA of 1 mile to port if she maintained her course and speed and a greater CPA if she took similar avoiding action. No radar plotting or equivalent systematic observations of the targets were made.

The bearing of the vessel originally to starboard changed to port after the alteration of course to starboard; after the collision it passed at a distance of some 2 miles to port. The target of the "MALOJA II" remained 10° to port and became lost in the sea clutter effect on the radar at a distance of some 3 miles. Due to it not having opened its bearing to port the OOW became concerned and he directed the look-out to keep a sharp look-out to port, from the port wing of the bridge.

At an estimated distance off of 0.3 to 0.4 mile, the green side-light and masthead lights of the "MALOJA II" came into view bearing some 45° on the port bow and the order was given to the helmsman to hard-a-starboard.

12. Time of the collision

The time of the collision (2140.4) was ascertained from the CCGRS recordings of radiotelephone communications and was indicated by two short periods of 'static', or interference, on an otherwise interference free recording. The interference occurred between communications

prior to and after the collision.

13. **Discrepancies in the accounts of events**

The discrepancies appear in the accounts by each vessel, mainly in respect to:

1. The radiotelephone communications between them;

2. Radar bearings and distances between each vessel and the sequence of events; and

3. The alteration of course by the "JOHN M" to starboard when distant 0.5 mile from the "MALOJA II".

(1) Radiotelephone communications

The "JOHN M" insisted at first that there had been no radiotelephone communication with any other vessel prior to the collision. The "MALOJA II" insisted that there had been communications, first on channel 16, then on channel 6, but they had concerned only the weather conditions experienced by each, the ports departed from and bound for and that the other vessel was bound for Sorel, Quebec.

From the above, and in view of the fact that no identification had been passed between vessels before the collision, it was at first believed the "MALOJA II" had been in communication with another inbound vessel which was within radiotelephone range but beyond radar range.

Examination of recorded messages on channel 16 made by a Canadian Coast Guard Radio Station (CCGRS) for a period of 60 minutes before the collision revealed that two unidentified vessels had been in communication for a period some 8 minutes before the collision and two vessels had been in communication after the collision. It was later confirmed by the persons involved that the communications were made between the "MALOJA II" and the "JOHN M", involving the two OOW's before the collision and the two masters afterwards.

The CCGRS did not have the facility to record channel 6 but both vessels' OOW's were certain that the continuing communications on channel 6 did not involve navigation procedures but consisted solely of information regarding ports of departure and arrival and the weather to be expected by each. The conversation lasted an estimated 1 minute when both vessels reverted to listening on

channel 16.

The CCGRS recorded radiotelephone communications on channel 16, together with information provided by the other vessel in the area regarding messages on channel 6, indicate that the "MALOJA II" called the "JOHN M" at 2133 on channel 16 due to concern that she (the "JOHN M") was crossing the "MALOJA II" bow from starboard to port. At that time, the two ships were some 3.5 miles apart. The "JOHN M" interrupted on channel 16 requesting the "MALOJA II" to switch to the more appropriate ship-to- ship communications channel 10. After regaining communication on channel 10 and the completion of the exchanges of information regarding weather etc., the "JOHN M" requested a red-to-red passing, i.e. port-to-port; it is not known whether the "MALOJA II" heard and/or confirmed the request.

The next communication was initiated by the "JOHN M" on channel 16 at 2140 again requesting a red-to-red passing. At that time, the "MALOJA II" is estimated to have been some 200 metres distant and visible to the "JOHN M"; there remained 18 seconds to collision.

(2) Probable sequence of events

In the absence of written records such as radar plots and their times, course recordings, etc., and based only on the reliance of remembered evidence and the contents of deck log-books, it is difficult to exactly reconstruct events. However, it was established that the "JOHN M" was initially steering a course of 290°T and the "MALOJA II" a course of 112°T before each altered course to avoid each other. This means they were approaching each other on tracks which were diverging by 2°.

The initial bearings and distances off each other as described by each vessel, show when plotted on the chart, that one must be substantially in error.

A careful reconstruction of events (see annex 1), using the remembered evidence, the CCGRS recordings of communications and the written information provided by the other vessel in the area, shows that the most probable sequence of events was that the "JOHN M" altered course 10° to starboard at approximately 2126 when the "MALOJA II" was distant some 5.5 miles and right ahead.

The "MALOJA II" probably altered her course to 100°(T)

i.e. 12° to port at about the same time as the "JOHN M," in any case the "MALOJA II" was probably steering 100°T at 2126 until a few seconds before the collision.

It was confirmed by the third vessel in the area that she had been in radiotelephone communication with the "JOHN M" on VHF channel 6 and had agreed to a "right to right" passing, however both she and the "JOHN M" altered course to starboard to pass "red to red". The "JOHN M" believed that both vessels ahead would alter course to starboard, similar to her avoidance action.

Some firm times are available from CGRS recordings in the seconds before the collision and on the basis of these timings, the probable angle of impact and the likely tactical diameters (turning circles) of each vessel a reconstruction of the final three to four minutes before collision has been plotted (See Annex 1).

According to CCGRS recordings of VHF channel 16 the collision occurred at 2140.4. Some four minutes before this time it appears that the "MALOJA II" was steering 100°(T) at a speed of 13 knots, and that the "JOHN M" was steering 300°(T) at a speed of some 12 knots.

The collision damage observed on both vessels would appear to indicate the port side of the bow of the "JOHN M" initially struck "MALOJA II" on her starboard side at about two thirds of her length from forward, from a direction of about 45° abaft the latter vessel's beam.

For this situation to have occurred a considerable change in aspect between the vessels must have taken place in the moments before the collision.

It would appear that the greater alteration of course was made by the "JOHN M" for the following reasons:

- although she was the larger of the two vessels and had a larger tactical diameter because of this, she was in the ballast condition and would answer the helm more quickly; and

- the "MALOJA II" was in automatic steering at the time of her sighting of "JOHN M" (approximately 1.7 minutes before the time of collision). While the time required to carry out the reported change of steering mode to hand steering is unknown, the change-over delayed the execution of the "hard to port" order given, and it is unlikely that her swing to port was rapid at the time of collision given that

she was in a loaded condition.

(3) **"MALOJA II", First sighting of "JOHN M"**

When the "MALOJA II" first visually sighted the "JOHN M", she was determined by radar to be bearing 20° on the starboard bow distance 0.9 mile. She was reportedly showing two masthead lights and a green sidelight and the open configuration of the masthead lights led to the belief that the two vessels would pass starboard-to-starboard but when 0.5 mile distant the configuration of the masthead lights changed and a red port sidelight appeared indicating that the "JOHN M" had altered course to starboard.

If both vessels were exactly on their respective courses of 100° and 300° they were on a crossing course of 20°.

From the reconstruction, given that the sidelight screening of the "JOHN M" was to specification, the first sighting of the "JOHN M" occurred when she was 0.81 mile distant from the "MALOJA II". As the "MALOJA II" was estimating distances by range rings and not by range marker, it would thus appear that her account of the sighting of the green sidelight of the "JOHN M", 20° on her starboard bow at approximately 0.9 mile, was correct.

(4) **"JOHN M" First sighting of "MALOJA II"**

The "JOHN M" reported that her first sighting of the green sidelight of the "MALOJA II" occurred when the latter vessel was 45° on her port bow and distant 0.3 to 0.4 mile. Given that the "MALOJA II" was steering 100° at this time, it would appear that her red and not her green sidelight would have been visible to the "JOHN M".

From the reconstruction it would appear that the "MALOJA II" was bearing 308° at this time i.e. she was 8° on the starboard bow of the "JOHN M".

For the "JOHN M" to have sighted the green sidelight of the "MALOJA II" 45° on her port bow, she must have either altered course to starboard before the visual sighting of the "MALOJA II" or her account of the first sighting of the "MALOJA II" on her port bow was in error.

14. **Use of parallel index lines as a means of radar plotting**

Parallel index lines consist of 10 equidistant spaced

parallel lines engraved on a transparent screen, five on each side of the cursor; the screen is situated above the radar screen (PPI) and can be rotated which enables bearings to be taken with the cursor, or the parallel index lines to be placed on a target.

The radar on the "MALOJA II" was gyro stabilized giving a north-up relative motion display; the heading marker indicated the true course on the edge scale and the cursor indicated true bearings.

The principal use of the parallel index lines is for coastal navigation, however, they can also be used as a plotting device for collision avoidance purposes and this was initially done on the "MALOJA II".

To properly use the parallel index lines in order to estimate the predicted CPA, the target's 'echo trail' is aligned with the parallel index lines. To increase accuracy, an additional parallel index line can be drawn on the screen with a grease pencil, the drawn line passing through the target and its trail; the CPA is then indicated by observing the distance which the drawn parallel index line passes the ship's position at the centre of the screen.

The "MALOJA II" used a partial form of the above system for the first 5 minutes of observation during the period that the "JOHN M" was considered to be 12 to 9.5 miles distant; course was then altered to port in the belief that the new CPA would be in the region of 1.5 miles to starboard.

15. Collision Regulations

The Collision Regulations are recognized by all major maritime nations and have been compiled over many years drawing on the experience and expertise of many nations. The International Maritime Organization (IMO) endorses the Collision Regulations and the STCW Standards regarding the watchkeeping of the deck department serve in part to expand upon the Collision Regulations.

The Collision Regulations are separated into Section I, entitled Conduct of Vessels in Any Condition of Visibility, Section II, Conduct of Vessels in Sight of One Another and Section III, Conduct of Vessels in Restricted Visibility. It should be noted that the terms 'give-way' and 'stand-on' vessels apply only when vessels are in actual sight of one another.

The applicable rules are included in the Annex to this report.

Rule 7 entitled 'Risk of Collision' and applicable to vessels in any condition of visibility, states in part:

> (a) Every vessel shall use all available means appropriate .... to determine if risk of collision exists....
>
> (b) Proper use shall be made of radar equipment ....
>
> (c) Assumptions shall not be made on the basis of scanty information ....
>
> (d) In determining if risk of collision exists the following considerations shall be among those taken into account:
>
> > (i) such risk shall be deemed to exist if the compass bearing of an approaching vessel does not appreciably change, ...

The initial means of determining the risk of collision by both vessels was the use of their radars which were fitted with effective reflection plotters, also there were paper radar plotting (manoeuvring) sheets to hand. However, no plots and no equivalent systematic observations were made; assumptions were made by both vessels on the basis of scanty radar information.

Rule 19 entitled "Conduct of Vessels in Restricted Visibility" applies to vessels not in sight of one another in or near an area of restricted visibility, and states in part:

> (b) Every vessel shall proceed at a safe speed ....
>
> (d) A vessel which detects by radar alone the presence of another vessel shall .... take avoiding action in ample time, provided that when such action consists of an alteration of course, so far as possible the following shall be avoided:
>
> > (i) an alteration of course to port for a vessel forward of the beam, other than for a vessel being overtaken,

(ii) an alteration of course towards a vessel abeam or abaft the beam.

(e) Except where it has been determined that a risk of collision does not exist, every vessel which hears apparently forward of her beam the fog signal of another vessel, or which cannot avoid a close-quarters situation with another vessel forward of her beam, shall reduce her speed to the minimum at which she can be kept on her course. She shall if necessary take all her way off and in any event navigate with extreme caution until danger of collision is over.

Both vessels were proceeding at a safe speed within the context of Rule 6 and both had their engines ready for immediate manoeuvre. Both vessels initially detected the presence of each other by radar alone, both determined that a risk of collision existed and both altered course in ample time. However, the "MALOJA II" altered course to port for a vessel forward of the beam in contravention of Rule 19(d)(i). The "JOHN M" altered to starboard, which was a correct manoeuvre except that an assumption was made on the basis of radiotelephone communications that the "MALOJA II" would also alter course to starboard. In contravention of Rule 19(e), neither vessel reduced speed or stopped engines when a risk of collision developed.

The initial alterations of courses by both vessels placed them in a crossing situation. However, when the "JOHN M" was first sighted by the "MALOJA II", the "JOHN M" was reportedly 20° on her starboard bow distant 0.9 mile showing a green sidelight. Had neither vessel altered course at this stage, each would have passed clear of, but close to the other. The "JOHN M" would have crossed astern of the "MALOJA II". (See Annex I).

Due to the close proximity on passing, a risk of collision existed and Rule 15 applied equally to both vessels as both had the other on her own starboard side. The rule states:

Crossing Situation - International

(a) When two power-driven vessels are crossing so as to involve risk of collision, the vessel which has the other on her own starboard side shall keep out of the way and shall, if the circumstances of the case admit, avoid

crossing ahead of the other vessel.

Reportedly the "MALOJA II" was not observed visually by the "JOHN M" until about 1 minute after the "JOHN M" was observed from the "MALOJA II". The vessels were about 0.5 mile apart. From the reconstruction it will be seen that the "MALOJA II" was probably fine on the starboard bow, showing a green sidelight, at this time.

The "JOHN M" altered course to starboard at about 0.4 mile from the "MALOJA II", and in so doing, attempted to cross ahead of the other vessel.

16. **Fields of vision both vessels**

The fields of vision from the navigation bridges of both vessels were good with no obstruction to forward vision other than by the deck cranes.

17. **Allowed leeway, "MALOJA II"**

The deck-log book and the verbal testimony of the OOW indicated that 2° had been allowed to the course steered to counteract the effects of leeway, therefore the course steered was 112° true to make the required course of 114° true. The wind was indicated in the log-book as being east-south-east (112°T) force 4 (11 to 16 knots) and was recorded by a Canadian Coast Guard weather observation post at Argentia, Newfoundland, some 90 miles distant, as being 110°T to 120°T at 10 to 13 knots.

The above placed the wind right ahead or slightly on the starboard bow; therefore, leeway, would not normally be applied but if any, would be applied in the other direction; i.e., 116°T to make 114°T.

It is believed that the 2° allowed to port was in fact allowed in order to adjust the vessel's direction back onto the drawn track on the chart since the last fixed position indicated her to be to the south; i.e., to starboard, of the track.

18. **Command of the English language, both vessels**

As agreed in the IMO convention, the language for intership communication is English. On the "MALOJA II" the master, who had an excellent ability in English, could not assist in describing events prior to the collision as he was not present on the navigation bridge. At the time of the OOW's interviews, he

indicated a poor ability in English therefore the services of a Philippine national, who had good ability in the OOW's natural language and dialect and in English, were obtained.

On the "JOHN M" the master indicated an excellent knowledge and ability in English and the OOW, although hesitant, showed a good knowledge of basic English nautical terminology. During interviews it was not considered necessary to use the services of an interpreter.

19. Course recorders

The "JOHN M" was fitted with a course recorder, however, it was not in use prior to and at the time of collision. It was the practice to use it only during pilotage situations or when many frequent alterations of course were expected. The use of the course recorder would have assisted in verifying the actions taken prior to collision.

The "MALOJA II" was not fitted with a course recorder.

20. Use of radiotelephone as a means to determine risk of collision

As indicated in Rule 7(a), a radiotelephone is a means for use in determining if risk of collision exists.

The proper use of radiotelephone can be a valuable aid, however, there have been many occasions when the incorrect identification of radar targets has occurred leading to confusion between vessels. This danger has also been demonstrated on numerous occasions during simulated electronic navigation exercises.

The recorded communications between the "MALOJA II" and the "JOHN M" show that neither identified the other either by name, course and speed, positions or their bearings and distances from each other.

The "JOHN M" altered course to starboard during communications with two vessels ahead but did not verify that both understood her intentions.

The "MALOJA II" altered course to port for the radar target of the "JOHN M", which at that time was bearing some few degrees to starboard, the intention being to give more passing distance. Shortly after, a radiotelephone communication was made by the "MALOJA II", which

was prompted by concern that the target was a vessel thought to be passing to starboard but was possibly crossing from starboard to port. However, that communication was not properly completed; instead, information regarding the weather, etc., was exchanged.

21. **Recorded navigation information**

In the case of both vessels, the lack of records of radiotelephone communications, courses steered, speeds, engine movements and fog signals greatly hampered the inquiry.

22. **Aspect of the collision**

The two vessels collided at speed while turning away from each other causing glancing contacts between hull and bow.

Inspection of damage to each vessel indicated the port bow of the "JOHN M" first contacted the starboard side of the "MALOJA II", approximately two-thirds of her length from forward, at an angle of some 20°. The starboard quarter of the "MALOJA II" then contacted the port bow of the "JOHN M" at a position slightly further aft.

From the fact that one vessel displaced 14,090 tonnes and was proceeding at 14 knots and the other displaced 18,356 tonnes and was proceeding at 12 knots, it can be seen that the avoidance of a stem to hull contact prevented what could have been a considerably more serious casualty.

23. **Other vessel immediate vicinity**

It is considered that the vessel following on the port quarter of the "MALOJA II" presented no unusual difficulties to the situation; correctly she altered course to starboard and passed well clear of the "JOHN M".

24. **Crew Qualifications and Experience**

"MALOJA II"

The master held a West German Master Foreign Going Certificate issued at Hamburg, 1965, and had been master of various ships since 1975. He had been in command of the "MALOJA II" since September 1987.

The 3rd mate held a Philippine 3rd Mate's Certificate

issued at Manila, November 1979, and a Certificate of Competency having completed retraining on a Radar Observation course issued at Manilla, July 1986. He also held a Philippine 'Ships Restricted Radiotelephone Operators Course' certificate of completion. He had been seafaring for 10 years, had been 3rd mate of various ships since December 1985 and 3rd mate of the "MALOJA II" for 5 months.

The helmsman and look-out both had considerable experience at sea. Neither held formal marine qualifications, nor were they required to by Regulations.

"JOHN M"

The master held a Greek Master Foreign Going Certificate issued in 1979. He had been master of various vessels since 1979 and master of the "JOHN M" for 4 months.

The 2nd mate held a Greek 2nd Mates Certificate issued in 1983. He had been 2nd mate of various vessels and 2nd mate of the "JOHN M" for 4 months.

Radar observer courses and radiotelephone operators licences are a necessary part of obtaining Greek certificates.

The helmsman and look-out both had considerable experience at sea. Neither held formal marine qualifications nor were they required to by Regulation.

25. Subsequent fire, "MALOJA II"

During March 8, 1988, while secured alongside at a repair yard in Halifax, Nova Scotia, a fire broke out inside a container stowed on deck. The fire was reportedly caused by heat transferred through the container side from an oxy-acetylene torch used to cut away the damaged deck crane. The burning cargo consisted of plastic insulation material which was quickly extinguished by the ship's crew and the local fire department. There was no other damage, pollution or injuries.

Findings

The "MALOJA II" and "JOHN M", collided at speed in the Cabot Strait causing damage to both while under conditions of reduced visibility, due to the failure of both vessels to observe certain provisions of the Collision Regulations and Conventions. It would appear that these were the contribut-

ing factors:

Both Vessels

- proper use was not made of the radar equipment in that there was no radar plotting or equivalent systematic observation;

- assumptions were made on the basis of scanty radar information;

- correct and effective use of the VHF R/T equipment was not made to ensure that the intentions of each vessel were understood by the other, partially because of the lack of command of the English language and the use of non standard vocabulary; and

- to avoid collision, neither vessel slackened speed or stopped or reversed her propulsion.

"MALOJA II"

- before the "JOHN M" was sighted visually the vessel's course was altered to port;

- in a close quarters situation, the vessel's ability to manoeuvre was delayed by the change-over from automatic to manual steering less than 2 minutes before collision occurred.

- the master was not notified by the OOW of restricted visibility, contrary to the STCW convention and to his own instructions; and

- the master was fatigued and resting in his cabin.

"JOHN M"

- neither the master nor the 1st mate, both of whom were on the bridge, assisted in the navigation in reduced visibility in accordance with the practices of good seamanship,

- the vessel's course was altered to cross ahead of the "MALOJA II".

Other Findings

Vital sworn evidence presented by, in particular, the "JOHN M" did not correspond with other established

facts.

The last minute alteration of course to port made by the "MALOJA II" served to reduce the damage caused by the collision.

The lack of 'hard copy' evidence hampered the inquiry.

MARINE CASUALTY INVESTIGATIONS
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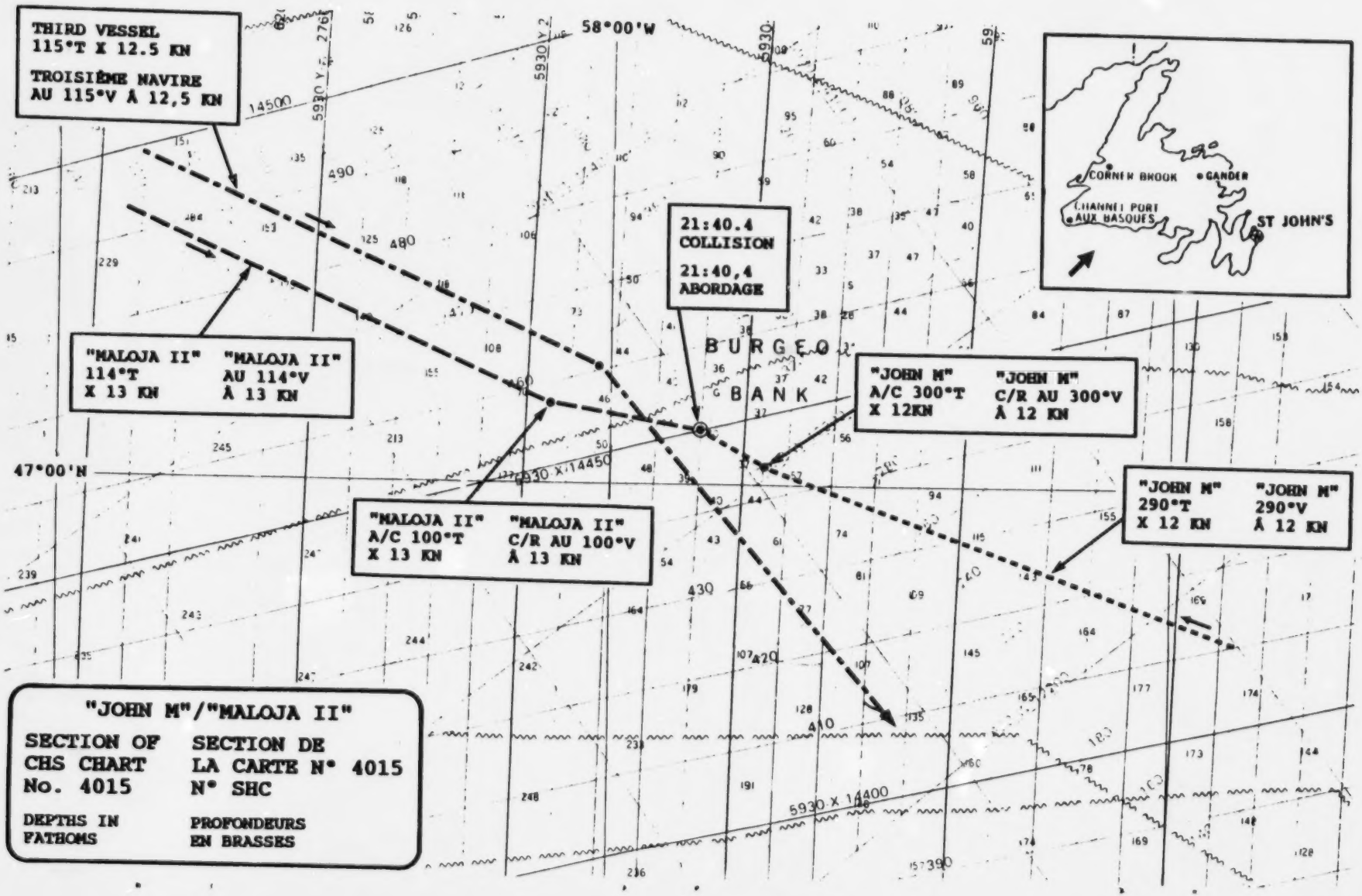
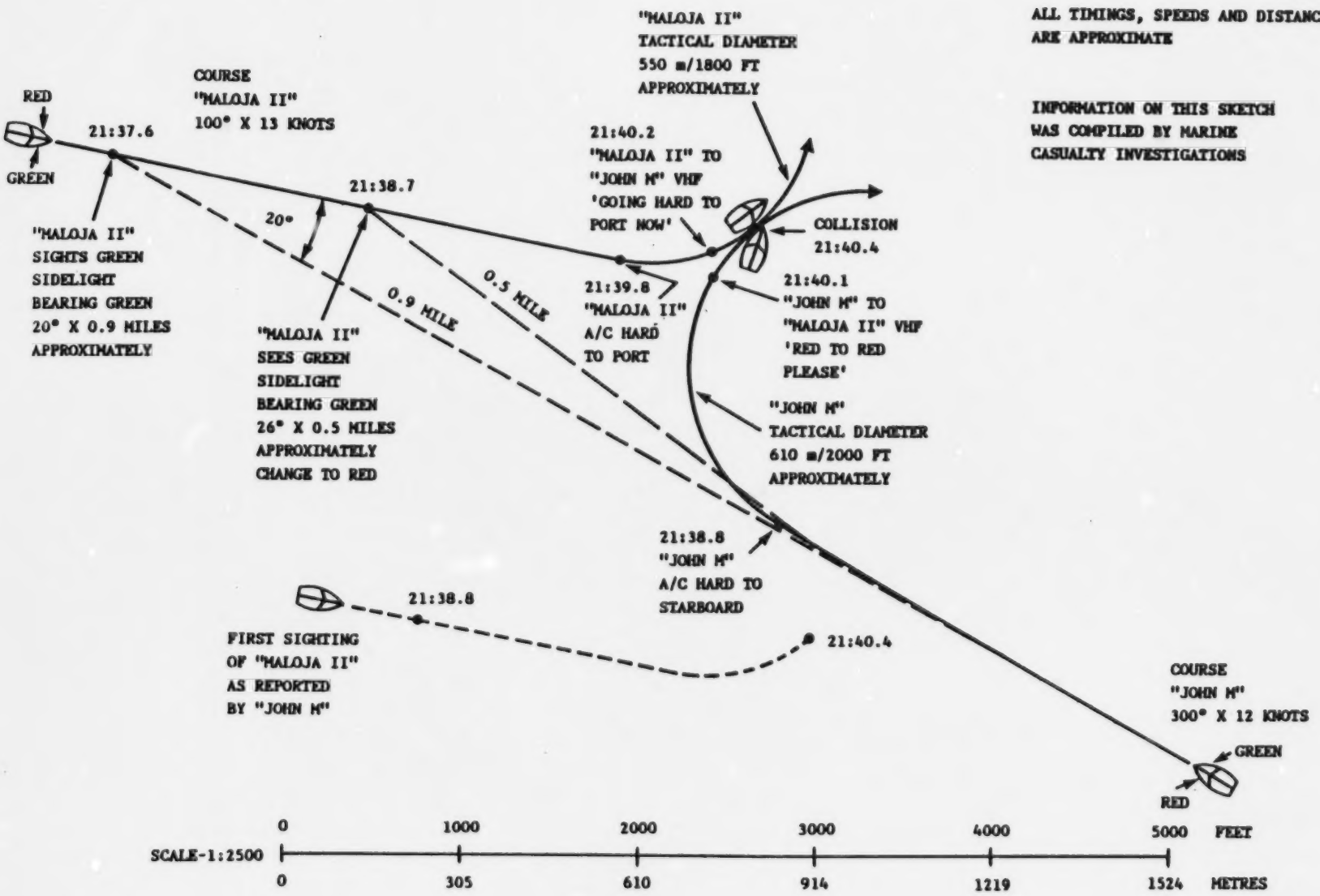
OTTAWA, ONTARIO
JULY, 1989.

Terms and Abbreviations

CPA	Closest point of approach.
Knot	Unit of speed; ie., 14 knots equals 14 nautical miles per hour.
Leeway	The lateral movement of a ship from her course, caused by wind.
PPI	Plan position indicator; ie., radar screen.
Radar cursor	Bearing marker
Sea clutter (Radar)	The radar reflected images from the sloping sides of waves.
Tactical diameter (turning circle)	The maximum distance between the vessel's original course and the course when the vessel has turned through 180°. May be approximated as 3 to 4 times the vessel's length.
UTC	Coordinated Universal Time
VHF	Very high frequency


THIRD VESSEL
115°T X 12.5 KN
TROISIÈME NAVIRE
AU 115°V À 12,5 KN
58°00'W
21:40.4
COLLISION
21:40,4
ABORDAGE
BURGEO
BANK
"MALOJA II"
114°T
X 13 KN
"MALOJA II"
AU 114°V
À 13 KN
"JOHN M"
A/C 300°T
X 12KN
"JOHN M"
C/R AU 300°V
À 12 KN
47°00'N
"MALOJA II"
A/C 100°T
X 13 KN
"MALOJA II"
C/R AU 100°V
À 13 KN
"JOHN M"
290°T
X 12 KN
"JOHN M"
290°V
À 12 KN
CORNER BROOK
GANDER
CHANNEL PORT
AUX BASQUES
ST JOHN'S
"JOHN M"/"MALOJA II"
SECTION OF
CHS CHART
No. 4015
SECTION DE
LA CARTE N° 4015
N° SHC
DEPTHS IN
FATHOMS
PROFONDEURS
EN BRASSES


"MALOJA II"
TACTICAL DIAMETER
550 m/1800 FT
APPROXIMATELY
ALL TIMINGS, SPEEDS AND DISTANCES
ARE APPROXIMATE
INFORMATION ON THIS SKETCH
WAS COMPILED BY MARINE
CASUALTY INVESTIGATIONS
COURSE
"MALOJA II"
100° X 13 KNOTS
RED
GREEN
21:37.6
21:38.7
20°
"MALOJA II"
SIGHTS GREEN
SIDELIGHT
BEARING GREEN
20° X 0.9 MILES
APPROXIMATELY
0.9 MILE
0.5 MILE
"MALOJA II"
SEES GREEN
SIDELIGHT
BEARING GREEN
26° X 0.5 MILES
APPROXIMATELY
CHANGE TO RED
21:40.2
"MALOJA II" TO
"JOHN M" VHF
'GOING HARD TO
PORT NOW'
COLLISION
21:40.4
21:39.8
"MALOJA II"
A/C HARD
TO PORT
21:40.1
"JOHN M" TO
"MALOJA II" VHF
'RED TO RED
PLEASE'
"JOHN M"
TACTICAL DIAMETER
610 m/2000 FT
APPROXIMATELY
21:38.8
"JOHN M"
A/C HARD TO
STARBOARD
21:38.8
21:40.4
FIRST SIGHTING
OF "MALOJA II"
AS REPORTED
BY "JOHN M"
COURSE
"JOHN M"
300° X 12 KNOTS
GREEN
RED
SCALE-1:2500
0 1000 2000 3000 4000 5000 FEET
0 305 610 914 1219 1524 METRES

ANNEX I

ANNEX II

RECOMMENDED

CODE OF NAUTICAL PROCEDURES AND PRACTICES

FOREWORD

The International Conference on Training and Certification of Seafarers, 1978 adopted the *International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978* on the 7th of July 1978.

This Convention contains a number of Regulations and Resolutions. This Recommended Code of Nautical Procedures and Practices contains the following Regulations and Resolutions from that Convention.

PART II

RECOMMENDATION ON OPERATIONAL GUIDANCE FOR OFFICERS IN CHARGE OF A NAVIGATIONAL WATCH

INTRODUCTION

1. This Recommendation contains operational guidance of general application for officers in charge of a navigational watch, which masters are expected to supplement as appropriate. It is essential that officers of the watch appreciate that the efficient performance of their duties is necessary in the interests of the safety of life and property at sea and the prevention of pollution of the marine environment.

AUTOMATIC PILOT

11. The officer of the watch should bear in mind the necessity to comply at all times with the requirements of the *Steering Appliances and Equipment Regulations* on the use of the automatic pilot. He should take into account the need to station the helmsman and to put the steering into manual control in good time to allow any potentially hazardous situation to be dealt with in a safe manner. With a ship under automatic steering it is highly dangerous to allow a situation to develop to the point where the officer of the watch is without assistance and has to break the continuity of the look-out in order to take emergency action. The change-over from automatic to manual steering and vice-versa should be made by, or under the supervision of, a responsible officer.

RADAR

14. The officer of the watch should use the radar when appropriate and whenever restricted visibility is encountered or expected, and at all times in congested waters having due regard to its limitations.
15. Whenever radar is in use, the officer of the watch should select an appropriate range scale, observe the display carefully and plot effectively.
16. The officer of the watch should ensure that range scales employed are changed at sufficiently frequent intervals so that echoes are detected as early as possible.
17. It should be borne in mind that small or poor echoes may escape detection.
18. The officer of the watch should ensure that plotting or systematic analysis is commenced in ample time.
19. In clear weather, whenever possible, the officer of the watch should carry out radar practice.

RESTRICTED VISIBILITY

23. When restricted visibility is encountered or expected, the first responsibility of the officer of the watch is to comply with the relevant rules of the applicable regulations for preventing collisions at sea, with particular regard to the sounding of fog signals, proceeding at a safe speed and having the engines ready for immediate manoeuvres. In addition, he should:
    (a) inform the master (see paragraph 24);
    (b) post a proper look-out and helmsman and, in congested waters, revert to hand steering immediately;
    (c) exhibit navigation lights;
    (d) operate and use the radar.

    It is important that the officer of the watch should know the handling characteristics of his ship, including its stopping distance,

and should appreciate that other ships may have different handling characteristics.

CALLING THE MASTER

24. The officer of the watch should notify the master immediately in the following circumstances:

(a) if restricted visibility is encountered or expected;

(b) if the traffic conditions or the movements of other ships are causing concern;

(c) if difficulty is experienced in maintaining course;

(d) on failure to sight land, a navigation mark or to obtain soundings by the expected time;

(e) if, unexpectedly, land or a navigation mark is sighted or change in soundings occurs;

(f) on the breakdown of the engines, steering gear or any essential navigational equipment;

(g) in heavy weather if in any doubt about the possibility of weather damage;

(h) if the ship meets any hazard to navigation, such as ice or derelicts;

(i) in any other emergency or situation in which he is in any doubt.

Despite the requirement to notify the master immediately in the foregoing circumstances, the officer of the watch should in addition not hesitate to take immediate action for the safety of the ship, where circumstances so require.

Standing orders:

In addition to the navigation entries and the IMO recommendations relating to navigational watchkeeping and watchkeeping in port the attention of the master and mate is called to the following instructions:

All log-books to contain the following careful, complete and correct entries:

Daily:

The time of commencing/finishing to load and/or discharge and/or cargo work, details and duration of any delays on account of weather or other causes,

quantity of cargo/ballast loaded and/or discharged.

Daily and one hour prior departure from any berth or anchorage:

Engine room clock synchronized with bridge clock,

engine telegraph, steam and air whistles, steering gear,

navigation lights, alarm bells, navigational electric devices and public-address-system tested.

Weekly:

Condition of sluices, steering gear and windlass.

On occasion:

Accidents to crew or vessel, damages and all unusual circumstances.

All entries to be checked and signed by master and mate each day.

All officers to relieve the watch in time and not to take over the watch until having a complete and thorough understanding of the existing situation.

The officer being relieved not to leave the bridge until being satisfied that his relief has full control, in heavy weather to make the rounds of the ship and satisfy himself that everything is secure both on deck and in the accommodation, and to report to his relief his findings and to make a note in the log-book.

All officers to take part in the navigation of the ship and to take solar and stellar observations whenever possible at sea and visual bearings when in sight of land.

Radar, Omega, Decca, Loran are aids to navigation only and must be checked against visual or celestial bearings whenever the opportunity occurs and any differences noted.

Whenever possible (at least every watch) azimuths must be taken on the standard magnetic compass and the gyro compass checked against it. All results to be entered in the compass deviation book.

Comparison of the magnetic and gyro compass must be made more frequently, especially after alteration of course.

When the automatic pilot is in use the regular helmsman will remain on the bridge as lookout or to do work around the bridge at the watch officer s discretion. The use of the automatic pilot will cease if the weather becomes thick or in heavy traffic. In all cases: ships must be given a wide berth.

In the event of decreasing and poor visibility (3 miles or less) the „International Regulations for Preventing Collisions at Sea" are to be carried out and the master to be called immediately.

Do not hesitate to call the master at any time you feel that he should be on the bridge. He would rather be called too often than too late.

Do not wait for the master to get to the bridge if you feel that some action must be taken for the safety of the ship and the lives on board. As officer of the watch you are in charge until the master relieves you.

All officers will sign this as an indication that they have read and understood the above instructions, IMO recommendations and orders.

ANNEX III

REGULATIONS FOR THE PREVENTION OF COLLISIONS

Short Title

1. These Regulations may be cited as the *Collision Regulations*.

PART B—STEERING AND SAILING RULES

SECTION I—CONDUCT OF VESSELS IN ANY CONDITION OF VISIBILITY

RULE 4

Application

Rules in this Section apply in any condition of visibility.

RULE 6

Safe Speed—International

Every vessel shall at all times proceed at a safe speed so that she can take proper and effective action to avoid collision and be stopped within a distance appropriate to the prevailing circumstances and conditions.

In determining a safe speed the following factors shall be among those taken into account:

(*a*) By all vessels:

(i) the state of visibility,

(ii) the traffic density including concentrations of fishing vessels or any other vessels,

(iii) the manoeuvrability of the vessel with special reference to stopping distance and turning ability in the prevailing conditions,

(iv) at night the presence of background light such as from shore lights or from back scatter of her own lights,

(v) the state of wind, sea and current, and the proximity of navigational hazards,

(vi) the draught in relation to the available depth of water.

(*b*) Additionally, by vessels with operational radar:

(i) the characteristics, efficiency and limitations of the radar equipment,

(ii) any constraints imposed by the radar range scale in use,

(iii) the effect on radar detection of the sea state, weather and other sources of interference,

(iv) the possibility that small vessels, ice and other floating objects may not be detected by radar at an adequate range,

(v) the number, location and movement of vessels detected by radar,

(vi) the more exact assessment of the visibility that may be possible when radar is used to determine the range of vessels or other objects in the vicinity.

APPENDICE III

RÈGLEMENT POUR PRÉVENIR LES ABORDAGES

Titre abrégé

1. Le présent règlement peut être cité sous le titre: *Règlement sur les abordages*.

PARTIE B—RÈGLES DE BARRE ET DE ROUTE

SECTION I—CONDUITE DES NAVIRES DANS TOUTES LES CONDITIONS DE VISIBILITÉ

RÈGLE 4

Champ d'application

Les règles de la présente section s'appliquent dans toutes les conditions de visibilité.

RÈGLE 6

Vitesse de sécurité—International

Tout navire doit maintenir en permanence une vitesse de sécurité telle qu'il puisse prendre des mesures appropriées et efficaces pour éviter un abordage et pour s'arrêter sur une distance adaptée aux circonstances et conditions existantes.

Les facteurs suivants doivent notamment être pris en considération pour déterminer la vitesse de sécurité:

a) Par tous les navires:

(i) la visibilité;

(ii) la densité du trafic et notamment les concentrations de navires de pêche ou de tous autres navires;

(iii) la capacité de manœuvre du navire et plus particulièrement sa distance d'arrêt et ses qualités de giration dans les conditions existantes;

(iv) de nuit, la présence d'un arrière-plan lumineux tel que celui créé par des feux côtiers ou une diffusion de la lumière des propres feux du navire;

(v) l'état du vent, de la mer et des courants et la proximité de risques pour la navigation;

(vi) le tirant d'eau en fonction de la profondeur d'eau disponible.

b) De plus, par les navires qui utilisent un radar:

(i) les caractéristiques, l'efficacité et les limites d'utilisation de l'équipement radar;

(ii) les limitations qui résultent de l'échelle de portée utilisée sur le radar;

(iii) l'effet de l'état de la mer, des conditions météorologiques et d'autres sources de brouillage sur la détection au radar;

(iv) le fait que les petits bâtiments, les glaces et d'autres objets flottants peuvent ne pas être décelés par le radar à une distance suffisante;

(v) le nombre, la position et le mouvement des navires détectés par le radar;

(vi) le fait qu'il est possible d'apprécier plus exactement la visibilité lorsque le radar est utilisé pour déterminer la distance des navires et des autres objets situés dans les parages.

RULE 7

Risk of Collision

(*a*) Every vessel shall use all available means appropriate to the prevailing circumstances and conditions to determine if risk of collision exists. If there is any doubt such risk shall be deemed to exist.

(*b*) Proper use shall be made of radar equipment if fitted and operational, including long-range scanning to obtain early warning of risk of collision and radar plotting or equivalent systematic observation of detected objects.

(*c*) Assumptions shall not be made on the basis of scanty information, especially scanty radar information.

(*d*) In determining if risk of collision exists the following considerations shall be among those taken into account:

(i) such risk shall be deemed to exist if the compass bearing of an approaching vessel does not appreciably change,

(ii) such risk may sometimes exist even when an appreciable bearing change is evident, particularly when approaching a very large vessel or a tow or when approaching a vessel at close range.

SECTION II—CONDUCT OF VESSELS IN SIGHT OF ONE ANOTHER

RULE 11

Application

Rules in this Section apply to vessels in sight of one another.

RULE 15

Crossing Situation—International

(*a*) When two power-driven vessels are crossing so as to involve risk of collision, the vessel which has the other on her own starboard side shall keep out of the way and shall, if the circumstances of the case admit, avoid crossing ahead of the other vessel.

SECTION III—CONDUCT OF VESSELS IN RESTRICTED VISIBILITY

RULE 19

Conduct of Vessels in Restricted Visibility

(*a*) This Rule applies to vessels not in sight of one another when navigating in or near an area of restricted visibility.

(*b*) Every vessel shall proceed at a safe speed adapted to the prevailing circumstances and conditions of restricted visibility. A power-driven vessel shall have her engines ready for immediate manoeuvre.

(*c*) Every vessel shall have due regard to the prevailing circumstances and conditions of restricted visibility when complying with the Rules of Section I of this Part.

RÈGLE 7

Risque d'abordage

a) Tout navire doit utiliser tous les moyens disponibles qui sont adaptés aux circonstances et conditions existantes pour déterminer s'il existe un risque d'abordage. S'il y a doute quant au risque d'abordage, on doit considérer que ce risque existe.

b) S'il y a à bord un équipement radar en état de marche, on doit l'utiliser de façon appropriée en recourant, en particulier, au balayage à longue portée afin de déceler à l'avance un risque d'abordage, ainsi qu'au «plotting» radar ou à toute autre observation systématique équivalente des objets détectés.

c) On doit éviter de tirer des conclusions de renseignements insuffisants, notamment de renseignements radar insuffisants.

d) L'évaluation d'un risque d'abordage doit notamment tenir compte des considérations suivantes:

(i) il y a risque d'abordage si le relèvement au compas d'un navire qui s'approche ne change pas de manière appréciable;

(ii) un tel risque peut parfois exister même si l'on observe une variation appréciable du relèvement, particulièrement lorsque l'on s'approche d'un très grand navire, d'un train de remorque ou d'un navire qui est à courte distance.

SECTION II—CONDUITE DES NAVIRES EN VUE LES UNS DES AUTRES

RÈGLE 11

Champ d'application

Les règles de la présente section s'appliquent aux navires qui sont en vue les uns des autres.

RÈGLE 15

Navires dont les routes se croisent—International

a) Lorsque deux navires à propulsion mécanique font des routes qui se croisent de telle sorte qu'il existe un risque d'abordage, le navire qui voit l'autre navire sur tribord doit s'écarter de la route de celui-ci et, si les circonstances le permettent, éviter de croiser sa route sur l'avant.

SECTION III—CONDUITE DES NAVIRES PAR VISIBILITÉ RÉDUITE

RÈGLE 19

Conduite des navires par visibilité réduite

a) La présente règle s'applique aux navires qui ne sont pas en vue les uns des autres et qui naviguent à l'intérieur ou à proximité de zones de visibilité réduite.

b) Tout navire doit naviguer à une vitesse de sécurité adaptée aux circonstances existantes et aux conditions de visibilité réduite. Les navires à propulsion mécanique doivent tenir leurs machines prêtes à manœuvrer immédiatement.

c) Tout navire, lorsqu'il applique les règles de la section I de la présente partie, doit tenir dûment compte des circonstances existantes et des conditions de visibilité réduite.

(*d*) A vessel which detects by radar alone the presence of another vessel shall determine if a close-quarters situation is developing and/or risk of collision exists. If so, she shall take avoiding action in ample time, provided that when such action consists of an alteration of course, so far as possible the following shall be avoided:

(i) an alteration of course to port for a vessel forward of the beam, other than for a vessel being overtaken,

(ii) an alteration of course towards a vessel abeam or abaft the beam.

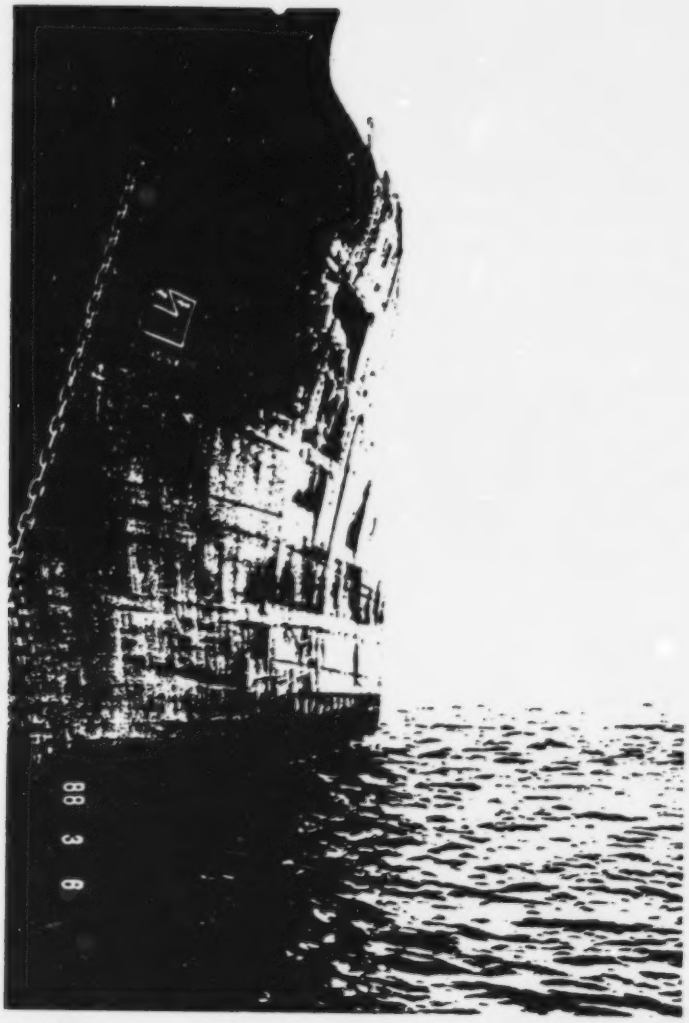
(*e*) Except where it has been determined that a risk of collision does not exist, every vessel which hears apparently forward of her beam the fog signal of another vessel, or which cannot avoid a close-quarters situation with another vessel forward of her beam, shall reduce her speed to the minimum at which she can be kept on her course. She shall if necessary take all her way off and in any event navigate with extreme caution until danger of collision is over.

d) Un navire qui détecte au radar seulement la présence d'un autre navire doit déterminer si une situation très rapprochée est en train de se créer et/ou si un risque d'abordage existe. Dans ce cas, il doit prendre largement à temps des mesures pour éviter cette situation; toutefois, si ces mesures consistent en un changement de cap, il convient d'éviter, dans la mesure du possible, les manœuvres suivantes:

(i) un changement de cap sur bâbord dans le cas d'un navire qui se trouve sur l'avant du travers, sauf si ce navire est en train d'être rattrapé;

(ii) un changement de cap en direction d'un navire qui vient par le travers ou sur l'arrière du travers.

e) Sauf lorsqu'il a été établi qu'il n'existe pas de risque d'abordage, tout navire qui entend, dans une direction qui lui paraît être sur l'avant du travers, le signal de brume d'un autre navire, ou qui ne peut éviter une situation très rapprochée avec un autre navire situé sur l'avant du travers, doit réduire sa vitesse au minimum nécessaire pour maintenir son cap. Il doit, si nécessaire, casser son erre et, en toutes circonstances, naviguer avec une extrême précaution jusqu'à ce que le risque d'abordage soit passé.

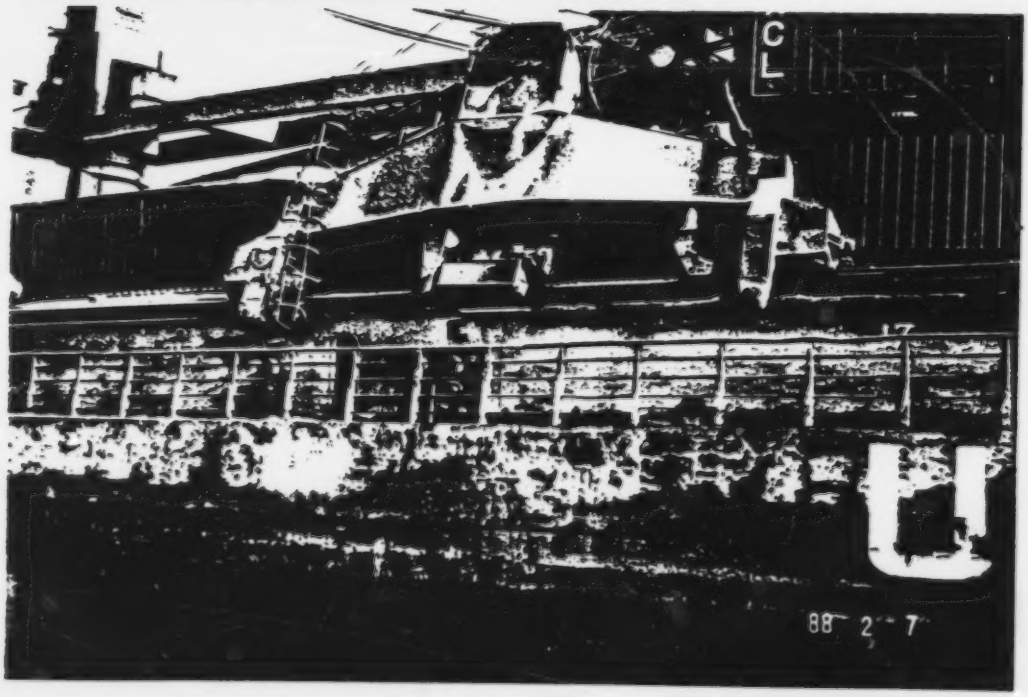


"JOHN M"
Collision damage,
port bow.

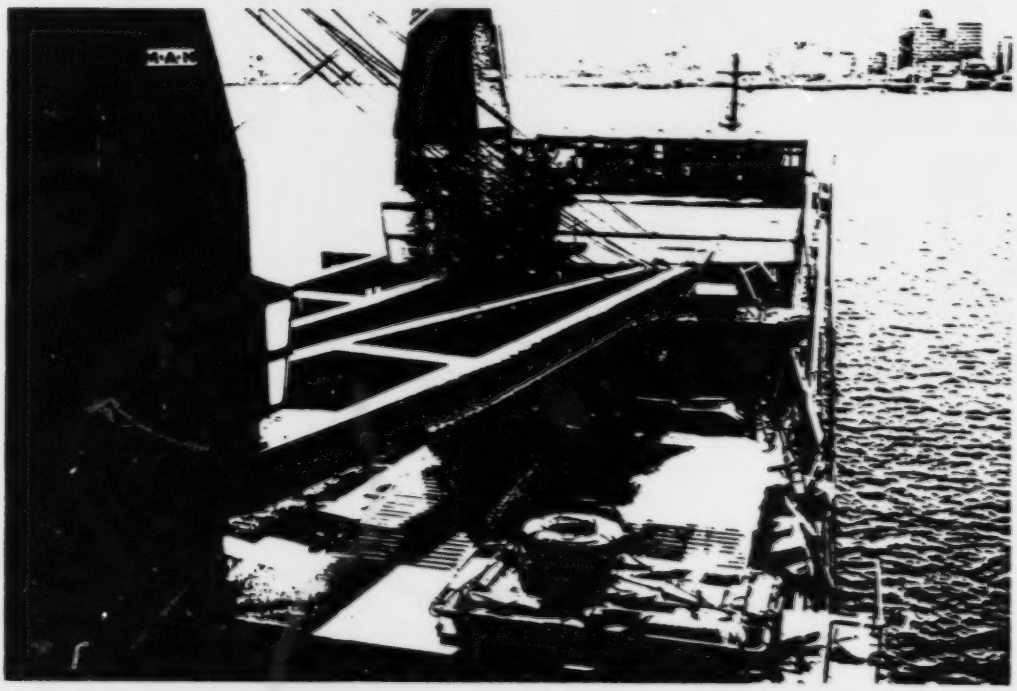
"JOHN M"
Vue des avaries
à la partie
avant bâbord.

"MALOJA II"
Collision damage,
starboard side.

"MALOJA II"
Vue des avaries
Côté tribord.



"JOHN M" View from navigating bridge.
"JOHN M" Vue à partir de la passerelle.



"MALOJA II" Vue à partir de la passerelle.
"MALOJA II" View from navigating bridge.